Balaena Quant.

Datathon Briefing

Outline

- This Is What We Are Looking For
- Dataset
- Sample Research Questions
- Data Analysis
- Suggested Framework
- You Might Want to Show These
- Resources

This Is What We Are Looking For

1. To understand how certain factors affect price movement.
2. To generate signals that make a profit in trading.
3. To explain the underlying theory for a profitable strategy.

Dataset

- 40k rows and 42 columns
- 17 factors in total
- Time-series data
- 1-hour interval
- All numeric
- Target variable: `close_price`

Sample Research Questions

- How do these factors affect price movement?
- How influential are these factors on price movement?
- How do these factors behave differently during periods of high versus low market volatility?
- What thresholds must be crossed for these factors to significantly affect price?

Be creative with your research questions.

Data Analysis

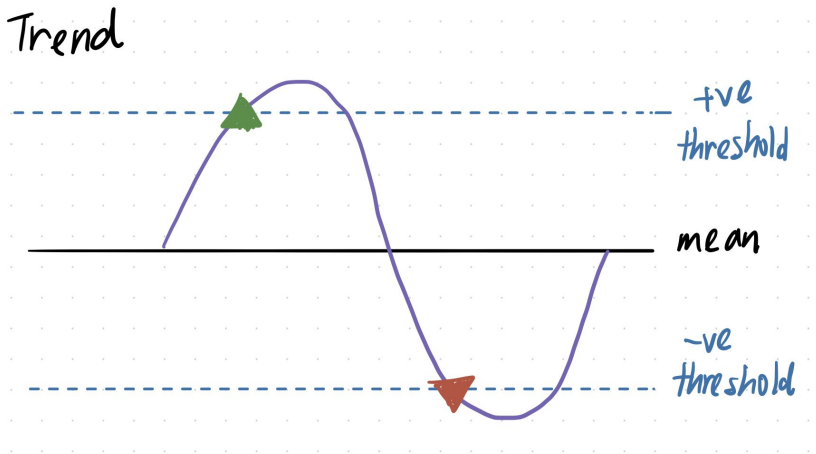
- Exploratory data analysis
- Possible transformations
  - Log
  - Square
  - Square root
- Possible models
  - Multilinear regression
  - Rolling z-score
  - **Explainable** machine learning techniques

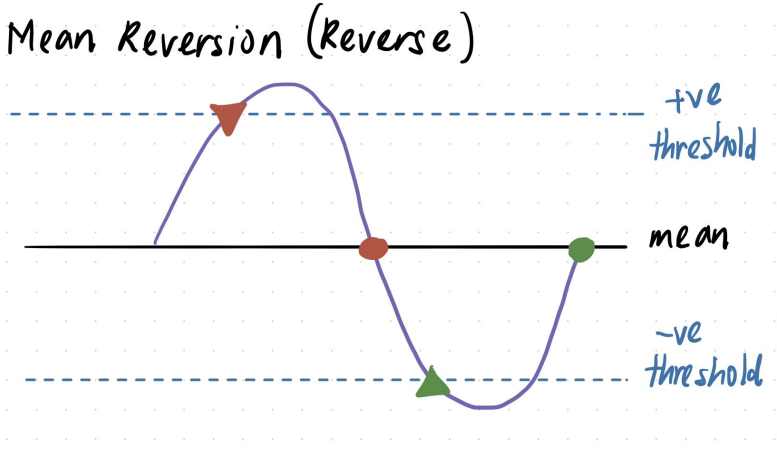
Suggested Framework

- Data Preprocessing
- Models
- Entry-Exit Logics
- Backtest
  - Fees = 0.02%
- Forward test
- Performance Metrics

Entry-Exit Logics

Find out if your model is more suitable for trend following or mean reversion.





▲ = open long position
● = close long position
▼ = open short position
● = close short position

Don’t overfit.
Use forward testing.

Metrics

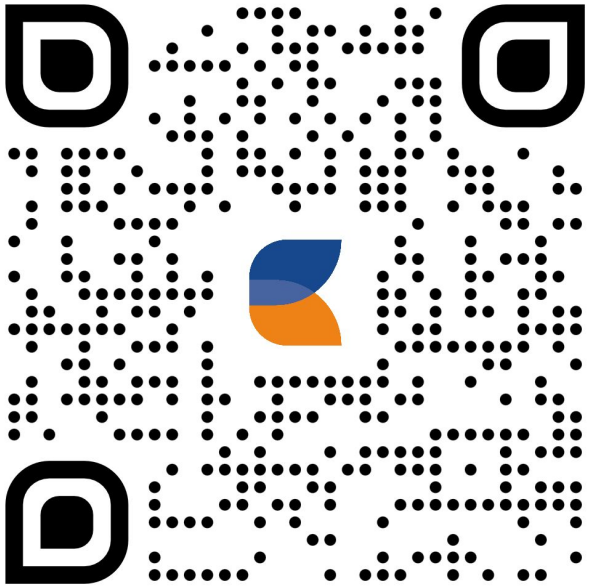
```
pnl = positions.shift(1) * close_price.pct_change()

sharpe_ratio = mean(pnl) / std_dev(pnl) * square_root(365 * 24)

max_drawdown = min(cumsum(pnl) - cummax(pnl))

trade_per_interval = num_trades / num_data_rows
```

You Might Want to Show These

- EDA
- Assumptions
- Model
- Best parameters
- Equity curve
- Trading performance results

Resources

1. Register a Discord account
2. Change your display name to `Your Name (UM)`
3. Join our algo trading campus' Discord
4. Tap the 📈 `Get Reference Materials` button
5. We will allow you to skip phases ahead during the competition
6. Read through **Phase 2, Module 4.1 Handout** for more framework details



🔗discord.gg/BalaenaQuant